

REMARKS

In response to the Office Action dated May 30, 2003, claims 1, 16, 26, 31, 42 and 43 are amended. Claims 1-5 and 14-44 are now active in this application. No new matter has been added.

REJECTION OF CLAIMS UNDER 35 U.S.C. § 112, FIRST PARAGRAPH

Claims 16, 26, 36 and 42 are rejected under 35 U.S.C. § 112, first paragraph, as not enabling any person skilled in the art to which the invention pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. The Examiner maintains that the specification does not reasonably provide enablement for the aspiration of liquid being sucked into the pipette when a space is made between the piston and the inner wall and the nozzle being attached. The Examiner contends also that “if a space is created between the inner wall and the piston then the device could not possibly operation to aspirate or suck liquid”.

The rejections are respectfully traversed.

Applicants believe that the Examiner misunderstands the meaning of the technical feature “a space between said piston and said inner wall of said pipette while said liquid is sucked into said pipette”, as presently recited in the claims.

At any rate, to clear up the Examiner’s confusion, independent claims 1, 31, 42 and 43 are amended to recite:

a piston fluid-tightly sliding along an inner wall of said pipette, a fluid receiving inner space being defined by said inner wall of said pipette, the nozzle and a lower portion of said piston, and varying in size as said piston slides along the inner wall of said pipette;

With regard to claims 16, 26 and 36 Applicants believe that a person of ordinary skill in the art would understand that a space between the piston and the inner wall of the pipette can be made while the liquid is sucked into the pipette when piston 2 is lifted at a *high speed*. That is, the high-speed lifting of the piston causes the sealing performance of the sliding surface between the pipette 1 and the piston 2 to permit air to enter the fluid receiving inner space.

Therefore, to expedite prosecution, claims 16, 26 and 36, are amended to delineate that

said first speed is sufficiently low to prevent formation of a space between said piston and said inner wall of said pipette while said piston slides along the inner wall to suck liquid into said pipette, for preventing air from entering said fluid receiving inner space through said space therebetween.

Thus, withdrawal of the rejection of claims 16, 26, 36 and 42 under 35 U.S.C. § 112, first paragraph, is respectfully solicited, in view of the amendments to claims 1, 16, 26, 31, 36, 42 and 43, and the above comments.

REJECTION OF CLAIMS UNDER 35 U.S.C. § 102 AND § 103

I. Claims 1, 2, 4, 5, 11-30, 43 and 44 are rejected under 35 U.S.C. § 102(e) as being anticipated by Maiefski et al. (USPN 6,416,718).

The rejection of claims 1, 2, 4, 5, 11-30 is respectfully traversed, claim 43 being amended to more clearly define subject matter that is patentable over Maiefski et al.

Although Maiefski et al. discloses a general fluid drawing and dispensing apparatus (wash station assembly), there is no disclosure of the relationship between the first speed (first pulse rate for suction of fluid) and the second speed (second pulse rate for the

dispensing of fluid), which is a feature of independent claims 1 and 21. This feature significantly differs from the technique disclosed in Maiefski et al.. That is, in the pipetting apparatus according to the present invention, in order to dispense a minute amount of fluid, the pipette 1 is, at its tip portion, equipped with a nozzle 1a having a small-diameter (D1) hole. Due to this construction, if the piston is moved at a high speed for sucking fluid into the pipette inner space, the passage resistance becomes large because the nozzle 1a has the small-diameter hole as mentioned above. This causes problems in that the suction of the fluid 8 cannot follow the movement of the piston 2. That is, at this time, the pressure in the interior of the pipette 1 becomes lower than the air pressure in the exterior of the pipette 1 and, hence, air can be introduced into the pipette 1 through a space which has made between the sliding surface of the piston 2 and the inner wall of the pipette 1 due to the difference in pressure between the interior of the pipette 1 and the atmosphere, which makes it difficult to dispense the fluid because the introduced air acts as an elastic body.

However, according to independent claims 1 and 21, and amended independent claim 43, in order to eliminate this problem, at the fluid suction, the piston 2 is slowly moved at a speed lower than the speed (second speed) at the fluid dispensing. Thus, claims 1, 2, 4, 5, 11-30, 43 and 44, as amended, are patentable over Maiefski et al. and their allowance is respectfully solicited.

II. Claims 3, 31-41 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Maiefski et al. in view of Kowallis (USPN 6,245,297), newly cited also, relied upon by the Examiner as disclosing a position changing means that comprises piezoelectric actuator.

The rejections are respectfully traversed.

The “piezoelectric actuator” of Kowallis, described at column 8 lines 54-55 of the reference, is for the shifting means 48, which differs from the technical feature of the present invention; i.e, the position changing means of the present invention, which includes the actuator. More specifically, the piezoelectric actuator of Kowallis is merely for *moving the transfer tip 46 vertically*, which corresponds to the ball screw 50 and the rotary drive mechanism 52 of Maiefski et al. According to the invention recited in independent claims 1 (from which claim 3 depends) and 31, the piezoelectric actuator is used for moving the position of the piston in the interior of a pipette for receiving a fluid in the pipette and dispensing the fluid from the pipette.

Thus, if the piezoelectric actuator of Kowallis were used in the arrangement of Maiefski et al., the claimed invention does not result as there is no teaching in these references of a piezoelectrically moving technique of a piston for suctioning of a fluid into the pipette and dispensing of the fluid received in the pipette. Clearly, the Examiner has not establish a *prima facie* basis to deny patentability to the claimed invention for want of the requisite factual basis. Consequently, it is respectfully solicited that the rejection of claims 3 and 31-41 under 35 U.S.C. § 103(a) as being unpatentable over Maiefski et al. in view of Kowallis be withdrawn, and that the claims be allowed..

CONCLUSION

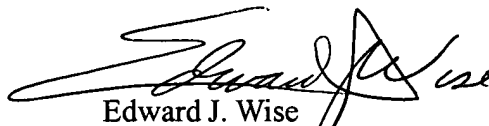
Accordingly, it is urged that the application, as now amended, is in condition for allowance, an indication of which is respectfully solicited. If there are any outstanding

issues that might be resolved by an interview or an Examiner's amendment, Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

MCDERMOTT, WILL & EMERY



Edward J. Wise
Registration No. 34,523

600 13th Street, N.W.
Washington, DC 20005-3096
(202) 756-8000 EJW:cac
Facsimile: (202) 756-8087
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